# *ETHNOGRAPHIC REPORT ON TRIP TO LOMERIO*

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# *Ethnographic Report on Trip to Lomerío*

Proyecto BOLFOR
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## SECTION I
## INTRODUCTION

### A. Purpose

The purpose of the trip was to visit Chiquitano communities

- to explain to each community project goals, elicit their cooperation, and provide names of informants concerning useful plants
- to develop a plan of work for an Inventory of Plant Uses by Chiquitanos
- to develop a questionnaire concerning plant use
- to train Marisol Toledo in ethnobotanical methods
- to collect ethnographic information concerning the Chiquitano.

### B. The Trip

Marisol Toledo accompanied me throughout the trip. Marisol has studied Chiquitano medicinal plant use in San Antonio, San Lorenzo, and Santa Rosa since 1993. She guided the trip and served as a key informant concerning location of the communities, as well as was known and cordially received in the communities. Marcelino Posiva Parapaino of CICOL accompanied us from July 12 until July 14. Miguel Angel was the chauffeur.

We left Santa Cruz, 9:30 A.M., July 8, and traveled by way of a backroad (not to be recommended because of many cut offs and side roads) from San Ramón to San Antonio, Pueblo of Canton Lomerío at 6:30 P.M. Padre Adalberto Mazur OFM allowed us to sleep in bunk beds, used during the school year for boarding students. Felipe Pocoena and Jenny Pocoena cooked and assisted greatly in all arrangements. Ivo and I brought $US 120 of food, which we shared with Marisol, the Gutiérrez family and the Pocoenas with their four children in return for cooking. There was no charge for lodging. In San Antonio we conferred with Ivo Kraljevic and Teresa Centurión concerning program planning and methodology. Daily from San Antonio we visited four communities a day, some within a half to an hour of travel, and others around an hour and half. Four wheel drive was needed on three occasions, usually when the transmission was hung up on the elevated parts between heavily rutted roads. All Chiquitano communities are linked by *caminos vecinales,* many not marked, and given the irregularity of the slopes and valleys, navigation is difficult (see geography). After Marcelino began guiding us, we were able to travel more directly. Leaving San Antonio at 6 AM on July 15 we visited four Chiquitano communities on route and arrived in Santa Cruz at 8:00 P.M. The trip going and returning averages nine hours of travel, not counting rest stops.

## C. Explanation to Communities

We visited 27 communities (total number in Lomerío), 24 of which we were able to meet with leaders and adults within the community. Three communities were vacant due to work in the fields. At each community, we visited with the *alcalde*, or in his absence, with the *caciques* or *vocales* (each community has in order or importance: one *alcalde*, two *caciques*, and two *vocales*). We requested that the *alcalde* call a meeting of the community. Attendance varied from five to fifty, low attendance being attributed to work in the fields. Highest attendance was found early in the morning between 6:30 and 7:30 or after 7 .M.

I presented the following explanation to the adults at the meeting in each community. BOLFOR is a project sponsored by USAID to maintain the forest, then some analogies about how their game and trees are diminishing. Next I explained that BOLFOR has a forestry expert, William Cordero and a zoologist, Damian Rumiz. I then explained that BOLFOR has a convenio with CICOL, about which convenio some were familiar. In several communities they asked when Guillermo was coming, showing keen interest in activities and forestry activities.

The ethnobotanical project was explained in these terms: this meeting is to talk about a plan for an inventory of useful plants in Lomerío, that annually Chiquitano folklore of plant use is diminishing (your grandparents knew more about forest products than you do). They agreed about this and felt many aspects of their Chiquitano culture have been forgotten. They also admitted that they haven't taken as good a care of the forest as their ancestors. (An possible aspect of this project would be to study antecedent ecological uses that Chiquitanos applied to forest as a possibility of reintroducing some of these methods). They commented that the young people sometimes cannot speak Chiquitano. I explained that the tentative methodology of the plan for the inventory was to visit each community for one week, and consult with four experts on plant usage (two males and two females, preferably older people). Then we would compile usages of various communities into an inventory with plant names (native, Spanish, and taxonomic) and usages. BOLFOR investigators would work with CICOL assistants (two BOLFOR/Museum investigators with two co-workers from CICOL). Particularities, however, were subject to change.

Importantly, the inventory consists of uses, in broad categories of *medicinales*: *artesanías, forraje, construcción, alimenticias, colorantes, venenosas, sociales, ritos, adorno, linderos, abejas, cosméticos y otros.* The inventory is to be completed in less than a year, and CICOL will be presented with the inventory for distribution to each community. This list would merely outline plant usage with no validation of the efficacy of any of the plant uses. (It is important to make it clear that the inventory is returning the data that the communities contributed and is not to be interpreted as BOLFOR authorized usage).

Some questions and answers that followed were: Who will have access to this data bank when we are finished? I answered that CICOL would have access and that they would be able to visit the Museum in Santa Cruz, where the Chiquitano collection would be stored. They would also be able to look at the dried samples, along with information about their uses. They seemed satisfied with these answers, complaining that other investigators did not do this.

In one village they showed concern that outsiders would have access to this data bank and that they would come and destroy their resources. I assured them that this was opposite to what BOLFOR stood for, and if valuable resources were found in the forest, then these resources would be used in a sustainable way to provide their continuity as well as provide perhaps an additional income that was not saw mill related. It is recommended limiting access to Chiquitano Data Bank to BOLFOR, CICOL, Museo/Herbario, and APCOB. (A question remains to what degree other institutions have access to this data bank).

In three communities, leaders asked if they would be required to provide lodging and food to investigators. The reply was that investigators would in no way be dependent upon villagers for these provisions and that the proposed plan was for them to live in tents and bring their own food, or at least exchange food. (I propose a viático of Bs 20 per day per investigator to cover food and lodging).

In two communities they also asked in what way would the community plant informants be recompensed for their time. I was not sure on this issue, so I asked what they thought. They suggested that *jornales* be provided for each informant. I said that I would discuss this with project leaders.

Presentation and discussion lasted approximately 30 minutes in each community and for one and half hours with health workers in San Antonio. Thirteen health workers were attending a health workshop in San Antonio so I asked the Sister in charge if I could explain the project on Thursday, July 14, at A.M. These health workers showed keen interest in integrating medicinal plants with biomedical cures. They were eager to know what would be done with this information. Some suggestions were that *viveros* (small herbal gardens) be a part of every community, that someone give them a course in use of medicinal plants ( such as Jaime Zalles of La Paz, who has written manuals of medicinal plants). The nun directing the course said that she would get a hold of Zalles, who works at the Arzobispado in La Paz. (One possibility is that the *auxiliares* could serve as a market source in their *Postas Sanitarias* for some Chiquitano herbal medicines, and an even more rich source would be a Bavarian market through the parish, which already does a thriving trade in hammocks from the region and selling them at around BS$300 to a priest who comes to San Antonio and latter sells them in Bavaria. Germans are very up on natural plant usages). Another possibility suggested was *viveros* (small herbal, condiment, et cetera gardens) for every *Posta Sanitaria.* They also wanted to import seeds of certain Altiplano medicinal plants presenting the problem of introducing species. In sum , the *auxiliares* were very interested in the project and many saw it as an opportunity to increase their resources.

The meeting was successful in getting the *auxiliares* to cooperate with the inventory. From previous experience with *auxiliares,* I have found them underpaid and eager to find ways of increasing their income. One disadvantage to their cooperation is that they are eager to get something in return and sometimes request resources from the community, conversely, they can also serve as interpreneurs in *casera* operations.

The following is a list of *auxiliares* and *Postas Sanitarias*

| ***Auxiliares*** | ***P.Sanitaria*** | ***Auxiliares*** | ***P.Sanitaria*** |
|---|---|---|---|
| Nicolás Parapaino | Florida | Saturnino Chuvé | Salinas |
| Manuel Chuvé | San Martin | Rosa ArredondoTotoca | |
| José Masaí | San Lorenzo | José Chuvé Manzán | Fátima |
| Pedro Peña | Palmira | Alonso Opiví (sp?) | San Pedro |
| Ignacio Parapaino | Cornucal | Pedro Cuagace T.(sp?) | Coloradillo |
| Moisés Posiva | San José Obrero | | |

Friar Adalberto met with Ivo, Teresa and me on Sunday, July 10. I also talked with him on other occasions and found him most cooperative and friendly. He is willing to help in various way. The most immediate would be for the investigation teams to stay in the visitor's house that belongs to the parish and will be vacant because the artist is leaving. Friar Adalberto has daily radio contact with Santa Cruz, which he offered for our use. He also told me to write him if I needed any information about Lomerío. The parish now has a fine relationship with CICOL, whereas in the 80s there were some problems with *Indigenismo Exagerado*, an indigenous movement wherein Chiquitanos wanted to separate themselves from state institutions (political and religious). Relationships with the Church are close in that two directors of CICOL are ex-seminaristas, Rubén Suárez, president, and Marcelino Posiva. The parish has a number of cooperatives. Those noted are a housing cooperative to build new houses, a folkcraft cooperative for hammocks and table cloths, and a tile make cooperative. Not involved with the parish, stores were also cooperative.

## D. Name of Experts

After the explanation to community adults about the project and their agreement to proceed with the proposal, I introduced Marisol and she proceeded with an questionnaire asking about the population of the community, number of families, what roles did the community have for plant experts, and the names of four people who could colaborate in the project. At first we emphasized medicinal plants, but after Ivo arrived in San Antonio, he suggested that we modify the questionnaire to include experts in all fields of useful plants. We then asked for the names of four people who could serve as informants of plant information.

It became clear after visiting several communities that the Chiquitanos did not have defined roles for experts in plants, such as other ethnic groups with herbalists, shamans, diviners, and *parteras.* This does not indicate that they are not there, but if they are, then Chiquitanos are not prone to reveal these roles to foreigners. My hunch is that they are not there because I interviewed a number of people knowledgeable about this, and they concurred that the Chiquitano do not have specialized roles for plant experts. However, they do have a category of *curandero*, sometimes associated with sorcery, *pichadero* (a word never to be used in their presence, as they quickly told us in one community), and *merkur*, which was a word somebody suggested and when we asked the communities, they didn't know what we were talking about.

My assessment of this matter is that knowledge of plant usage is collective information shared by members of the community with differing knowledge levels correlating with age. The older knowing more than the younger, and females knowing about plants for their task--somewhat nonagricultural in nature, as opposed to the males who would know about plants having to do with agriculture, hunting, and fishing. Although Chiquitano women work in the field and do agricultural chores, Chiquitanos consider their work basically as nonagricultural. (In somewhat secondary roles, men are seen as doing the "real" work or agriculture and women as doing the "reproductive" work (processing, reproducing, and feeding). The one *curandero* that we found in San Martin, José Maria Chuvé was trained in herbal medicines in another region of Bolivia. He informed us that his herbal curing had greatly decreased since the arrival of the hospital in San Antonio.

On the following page is a list of persons in each community that were selected as having superior knowledge about plant usage:

## Informants for Inventory on Plant Usage

| Community | Date | Families | Pop. | Plant Expert |
|---|---|---|---|---|
| Coloradillo | 7/9/94 | 27 | 140 | Pedro Charupá Parapaino, Maria Charupá |
| Palmira | 7/9/94 | 55 | 300 | Everyone knows about plants, will submit list. |
| San Pablo | 7/9/94 | 16 | 86 | Limited knowledge about plants, no experts. |
| Surusubi | 7/9/94 | 10 | ? | Ana Rodriguez, Miguel Garcia, Ramona Pocoena. Limited interest by Alcalde, will send list. |
| Monterito | 7/9/94 | 50 | 272 | José Maria Chuvé, expert herbalist.[1] |
| San Martín | 7/10/94 | 10 | 48 | Alonso Soriocó, will send list of more. |
| Todos Santos | 7/10/94 | 35 | 150 | Anselmo Rodriquez, Juan Rodriguez. |
| Fátima | 7/10/94 | 52 | 312 | Jacinto Chuvé[2], Javier Pesoa. |
| Santo Rosario | 7/11/94 | 19 | 109 | Will send list. |
| San Lorenzo | 7/11/94 | 40 | 250 | Will send list. |
| Puquio | 7/11/94 | 52 | 330 | Will send list. |
| San Simón | 7/11/94 | ? | 125 | Ignacio Chuvé Cuasase (medicinales). |
| San José Obrero | 7/12/94 | ? | ? | Tomás Namasai (medicinales) Tomás Roman (Curandero), |
| Salinas | 7/12/94 | 45 | 325 | Teresa Castro (Curandera). Ignacia Cuviru ( medicinales). |
| Potrerito | 7/12/94 | 12 | ? | Felipe Parapaino Chuve, Pabla Charukpa Cuasase |
| El Cornocal | 7/13/94 | 140 | ? | Santiago Parapaino, Dolores Chuvirú, Juan Chuvirú, Petrona Pesos. |
| La Asunta | 7/13/94 | 25 | 160 | Andrea Surubi, Pedro Sesari, Isabel Surubi, José Tomicha. Pascual Cambaré Parapaino, Marco Cambaré Namasai |
| Bella Flor | 7/13/94 | 11 | 87 | Teresa Tomiche Chuvé, Ignacio Parapaino Tomichá Will summit list after village meeting. |
| Los Rincones | 7/13/94 | 9 | 48 | Juán Faldín Aguilar, maría Chuvé, José M. Faldín Jerónima Quiriquivi, Eloisa Rodríguez, Mario Chuvé, Eusebio Rivera. |
| San Andrés | | | | Jesús Cuasace Aguilar, Lucinda Rivera, Melchor Antezana, |
| San Antonio | 7/14/94 | ? | ? | Ramona Cuasace. |
| Puesto Nuevo | 7/15/94 | 12 | 87 | Felipe Bailaba, Pedro Rodríguez, Asunta Bailaba, Teresa Soquere |
| Las Trancas | 7/15/94 | ? | ? | |
| Santa Anita | 7/15/94 | 12 | 62 | |
| El Cerrito | 7/15/94 | 24 | 110 | |

**1**Learned herbal curing doing military service in Villa Montes as assistant to a medical doctor. He bought and brought plants from San José de Chiquitos. He knows about 100 plants, but his practice has diminished in recent years because of hospital in San Antonio

**2**Jacinto is the oldest and has helped Mario Arrien, Austrian trained anthropologist who is investigating plant usage and ecotropes in Santo Rosario and San Lorenzo with support from APCOB

Some communities did not give us the names of plant informants because they wanted to discuss the matter with the entire community. They said that they would submit the list by July 18. However, we left on July 16 because Marisol needed to go to La Paz, and Marcelino Posiva agreed to collect the lists. It is doubtful that these communities will submit lists at this time, and it is suggested that CICOL send out a circular in September requesting that communities that did not submit lists, select candidates, and submit lists. It is also recommended that CICOL have leaders of the communities convoke adults for making lists of useful plants in their communities.

## E. Plan of Work for Inventory of Plant Usages

The plan of work includes four campaigns of fieldwork, each for a month. (After our return to Santa Cruz, the plan was modified to include three campaigns.) The campaigns will be October 1994, January 1995, April 1995, and July 1995. October, January, and July are good months because there is not much work for the campesinos, and they will be disposed to collaborate. In April, there is some difficulty due to the rice harvest, but within the proposed schedule it is necessary to include this month, and the rice harvest is not a serious impediment in that not all communities will be harvesting at the same time. The four campaigns are necessary to guarantee seasonal variations of plants necessary for botanical collections.

Communities are divided into four groups, based on proximity to one another and on dates of their fiestas (it is necessary to avoid visiting a community during fiesta time). The following is the divisions of the communities and the scheduled time of visitation:

| | |
|---|---|
| **October:** | San Antonio, Coloradillo, San Pablo, San Martin, La Asunta, El Cornocal, and Potrerito. |
| **January:** | Monterito, Surusubi, Palmira, Puquio, San Lorenzo, Florida, and Fátima. |
| **April**: | San Simon, Santa Anita, El Cerrito, Las Trancas, Puesto Nuevo, Santo Rosario and Todos Santos. |
| **July:** | San Ignacito, Salinas, San Jose El Obrero, Bella Flor, and Los Rincones. |

In each campaign, the first several days are used for getting organized. Each month of the campaign seven communities are visited, each for five days. There are two teams of investigators: each team has an investigator from BOLFOR and a contrapart from CICOL and visits one community for five days. Two days a week will be spent revising the data and entering it into the computer. In other words the two teams visit two communities a week. More teams and larger numbers of investigators are not recommended because of problems with lodging in the communities, psycho-social logistics of large teams, and foreign presence in the communities.

It is highly recommended that Marisol Toledo be one team member and director of fieldwork, both for her experience, training, and competence. Each team has four native informants in each community. Each native informant spends one day with the team. Native informants are to be composed of males and females, preferably elderly Chiquitanos with knowledge of plant usage. CICOL are responsible for further selection of native informants,

preliminary lists of plants and their usage within each community, notification of communities when teams will arrive, and providing two investigators throughout the campaigns. It is recommended that these CICOL investigators remain the same throughout the three campaigns for continuity and accrued experience.

The objective of each campaign is by means of a questionnaire to collect information about plant usage, to collect botanical information and plant specimens according to Museum and Herbarium standards, and to photograph the plants. Estimated time from a trial sample is 30 minutes for each plant, and an average of two plants an hour, 16 plants a day, and 82 plants a week for each community. This number will vary greatly as the number of new specimens will decrease within the campaign. Nonetheless information on similar plants will be taken to verify informant information. Moreover, plants will be fluorescent at various times. The logistics of fieldwork will depend greatly on the terrain and distance covered for each plant. Each team will visit four communities each campaign. On the fifth day of the week, team members will report findings to the people of the community and then return to the base camp in San Antonio.

After data collection in the communities, investigators will study their collections for omissions and repetitions, as well as enter data into Notebuilder files. They will also begin processing the plants, which includes pressing, drying, scientific identification, and presentation of reports for each campaign. The report will include a list of plants collected, and each's status as regards to botanical sample and plant usage information.

During the intervening months between campaigns, two BOLFOR investigators will transfer plant samples to the Museo/Herbario in Santa Cruz for further processing, botanical identification, and preservation within a Chiquitano Herbarium, set apart within the museum. Botanical supervision will be provided by staff of Museum/Herbarium.

BOLFOR investigators will be responsible for entering all plant usage information into a Data Bank, set up under Notebuilder program. A catalogue of plant usage is to be completed by September, 1995, which will be a print out of entries within Notebuilder file that contains an entry for each plant with names, identification, usages, and preparations. This catalogue is designed merely as the list of information provided by the communities without any guarantee of the validity of usages. Catalogues will be given to CICOL to be distributed freely to the *alcalde* of each community.

The Questionnaire is found in the appendix.

## SECTION II
## ETHNOGRAPHIC INFORMATION

The region of investigation includes Lomerío, Cantón Santo Rosa Palmar, Provincia Ñuflo Chávez. Lomerío is in the process of becoming a municipality, which would provide relative independence from Concepción, capitol of the Province, both in economics and politics. According to one informant, a municipality is nearly a province. Lomerío is composed of Chiquitano culture with 95 % Chiquitanos and 5% foreigners. Lomerío has an extension of 9,000 square kilometers, and population of 7,500 (according to Angel Sumami, parish coordinator), with the official census of INE being 4,500.

Chiquitano ethnicity is indicated in the use of Chiquitano language by adults. The youth can understand it, but many do not speak their native language. Chiquitano adults also speak Spanish, and some to a limited degree as indicated when they frequently translated my talks into Chiquitano. School are beginning bilingual education in Spanish and Chiquitano. Adults feel that Chiquitano culture is disappearing and welcomed the retrieval of folk knowledge concerning the use of medicinal plants.

Another indicator is their tendency to exclude foreigners, such as one owner of a store in San Antonio, who after five years said that she was leaving because several Chiquitano storeowners, also teachers in the school, were opposed to her. Nevertheless, Chiquitanos are *muy listo* to take advantage of the various international agencies assisting them. They have found a subtle way of ingratiating themselves with project people.

Chiquitanos are catholics with a shadow of the *reducciones* and *misiones* continuing throughout Lomerío by pervading influence of Franciscan missioners from Poland and Germany who have built magnificent churches, assisted in housing improvement projects with $7,000 houses of tile roofs, ceramic floors, and carved pillars in a number of the communities. Parishioners pay half the costs, do the labor, and the German government contributes the rest. The Church also maintains hospitals, clinics, and various cooperatives throughout the parish. Attendance at daily mass is especially high for any peasant community, and a "rock" choir provides the music. There still remains musical continuity from the time of the Jesuit missions. The previous pastor of San Antonio is talked about by Chiquitanos as a "larger than life figure" who brought electricity, cooperatives, housing, health care, and trading links with outside markets. The present pastor appears not to be the innovator as the other. In short, the friars and sisters exert a strong religious value system upon San Antonio and surrounding communities.

There are mixed protestant and catholic populations in Puquio, Fatima, and Surusubi. Protestantism arrived in the 1960 with members of the Summer Institute of Linguistics, whose overt purpose was to transcribe Chiquitano language and translate the Bible, but who also preached Southern US Baptist religion and converted a number of Chiquitanos. SIL missioners built an airstrip in Fatima (?), arriving from either Cochabamba or Riberalta where they had their center for linguistic analysis and translation of the bible into Chiquitano. One result are trained Chiquitano linguists, such as Felipe Pocoena of San Antonio, able to teach Chiquitano language to foreigners according to advanced language methods. In 1993, Friar Jesus Baleote Tormo, medical doctor at San Antonio, published a Chiquitano grammar which is available at the Casa de

Cultura in Santa Cruz for Bs. 30. Protestantism and APCOB, situated in Puquio, are two varying trends from the parroquial hold of the church. Moreover, the Catholic church has begun to align more with protestants, so earlier Catholic and Protestant differences in Lomerío no longer pose any problems.

Chiquitano religious traditions are also expressed in a number of Lomerío wide fiestas, *Año Nuevo, Carnaval, Semana Santa,* and *Navidad,* which is considered the largest. Many plants are used throughout these fiestas, both for decoration, food, and chicha. Fiestas are characterized by inviting each other to drink chicha. In Spanish, this is expressed *"Cántaro de Chicha en Tutuma",* and refers to the fact that they drink repeated glasses of chicha offered by friends, relatives, or compadres in a *golpe* (straight-up), and remain seated until they have finished the large *cántaro* of chicha. Drinking is accompanied by a band with flutes, small, and large drums. Meals are served with meat, yucca, and rice. Cigarettes are exchanged and smoked, being an important part of the fiesta. (Tobacco remains an important ritual plant for Highland and Lowland Indians). All guests are expected to drink, smoke, and eat, sometimes to their discomfort.

Another fiesta is called *Pascua* (not to be confused with Easter), but refers to giving a *cariño,* which consists of inviting a *compadre* or *comadre* to your house and giving them two *cantaros* (estimated several gallons each) of chicha, a chicken, and other foods, accompanied by a band. Chicha is categorized into sweet (non-alcoholic) and strong chicha. Chiquitanos frequently offer guests a drink of sweet chicha, if it is available.

Chicha is to Chiquitanos what coca leaves are to Andeans: a basic form of cordial exchange between two people. Whenever a stranger visits a Chiquitano, he or she is given a glass of sweet chicha, if it is available, to welcome and toast the person (*brindis)*. It is drunk at meals to honor the meal.

Every Chiquitano community has an annual fiesta to its patron saint, which ceremonially lasts for three days, *víspera, día de santo, and despedida*, but the celebration may take a week with excessive drinking. The saint fiesta is characterized by a *preste* (sponsor) who walks close to the statue of the patron saint. The *preste* furnishes the food, drink, and band, and he or she is helped in a reciprocal fashion by other community members or people from other communities. Fiestas are frequently instances of social and economic bounding. Although fiestas have been criticized as a lavish waste of resources, they serve as important mechanisms of exchange of resources and establishing reciprocal relationships.

In planning the schedule for visiting communities, care must be taken not to have investigators present when the community has its fiesta or during annual Lomerío wide fiestas. This can be coordinated by CICOL. The following is a list of communities and dates of fiestas:

***Fiestas Patronales de Lomerio***

| Fiesta | Fecha | Fiesta | Fecha |
|---|---|---|---|
| San Antonio | 13 Junio | Bella Flor | 30 Agosto |
| Fátima | 13 Mayo | El Cornocal | 8 Febrero |
| El Puquio | ? Noviembre | Las Trancas | 29 Funio |
| San Lorenzo | 10 Agosto | San Pablo | 30 Junio |
| Palmira | 16 Julio | El Cerrito | 29 Septiembre |
| Todos Santos | 2 Noviembre | Santa Anita | 26 Julio |
| San Martín | 3 Noviembre | Santa Rosario | 7 Octubre |
| Monterito | 24 Junio | Potrerito | 3 Mayo |
| Surusubi | 3 Mayo | Puesto Nuevo | 29 Junio |
| Salinas | 4 Agosto | San Ignacito | 30 Julio |
| Coloradillo | 15 Agosto | San Simón | ? |
| La Asunta | 15 Agosto | Los Rincones | ? |
| San José Obrero | 1 Mayo | Florida | ? |

Specific Chiquitano Cultural Practices (sources: Angel Sumami[1] and Felipe Pocoena[2])

*Minga* refers to members of the community cooperating with each other to accomplish a work intensive project for an individual or family in exchange for meals and chicha throughout the task, as well as an implicit understanding that the person receiving the help will do *minga* for those helping him or her. *Minga* is used for building houses, harvesting, clearing fields, and other labor intensive needs. *Minga* is distinct from *jornal* (wage) which is payment for labor (10 Bs. per day, 5 Bs. for half a day as a minimum, and 15 and 7, respectively, as a generous *jornal*). Time is a scarce resource for Chiquitanos, who allocate it for different tasks throughout the year. Mario Arrien, anthropologist, is studying the allocation of time, work, space, and seasonal tasks among the Chiquitanos (see section on Agriculture). His findings and advice will be useful for interrelating the amount of time allocated for plant usage with that of time allocated for other tasks. Chayanov has indicated a bell curve for peasant labor, which indicates that peasants will work correspondingly high for what is necessary for subsistence and fiesta, but where more effort is needed for extra benefits, they will not be motivated, or up to the point, no *vale la pena.* One explanation for the decline in plant usage is the amount of effort and time needed to find, process, and market these resources as compared to say going to the clinic, market, buying something from the traveling truck store. *Minga* provides a labor mechanism within a fiesta atmosphere of communality, eating and drinking, highly motivational for Chiquitanos, as well as decreasing the amount of effort for any one individual in completing a task.

[1] Angel Sumami is parish administrator for San Antonio and was recommended by Friar Adalberto as very knowledge about Chiquitano customs. Angel refers to himself as professor.

[2]Felipe Pocoena is in charge of electricity in San Antonio and trained in linguistics.

As a cross-cultural comparison, *minga* or *minka* as known by Indians of the Altiplano has been used as means of getting all the population innoculated. *Alcaldes* in communities around Challapata, Department of Oruro, required that for the annual *minka* each community have all their children innoculated. Among the Chiquitano, *Minga* can be used in forestry projects, plant harvesting, and processing. Although BOLFOR has a *convenio* with CICOL for certain task, it is likely that CICOL resorts to cultural forms of labor extraction to carry out required tasks. Sensitivity to labor needs, cooperative labor, reciprocal labor, and provision of food and chicha is important for cooperative work tasks with Chiquitanos.

Upon the death of someone, they have a wake for 24 hours with the body present, surrounded by flowers. Friends and relatives bring chicha, cigarettes, and a band. Every community has a cemetery apart from the village in the woods with the graves marked by tall wooden cross. The living fear the dead, which they refer to as *"bultos"*, which roughly translate as "backpack", but refers to a phantasm.[3]

*Jichi* is the spirit who controls nature. *Jichi* is present in springs that never dry up, and the spirit that protects the water. *Jichi* is also the *dueño* (Lord) of the forest and the animals. *Jichi* probably regulates hunting so that if game is caught, *Jichi* helped them, and if the game gets away, *Jichi* protected the game. (As one possible interpretation, *Jichi* represents animals, plants and humans within an ecological balance or a way of representing nature's needs in response to human exploitation). In my previous research, I found that many Andean rituals were communal exercises in understanding their balanced or unbalanced relationship with their mountain *ayllu* (or three-tiered fields). Chiquitano understanding of the forest is deeply embedded in both practical, experiental knowledge and a symbolic system of forest spirits. The degree to which this pervades modern and educated Chiquitano youth needs to be analyzed.

Witchcraft. *Brujería* is common among the Chiquitano, as it is in other parts of Bolivia. Witchcraft arrived in the 16th century with the Spaniards who practiced medieval forms of Christianity, heavily laden with paganism. Among the notable exceptions were the Jesuits, advocates of the Enlightenment and who missionized the Chiquitanos. Nonetheless, witchcraft worked its way into Chiquitano culture. Sorcery is cast by placing a piece of bone or any other garbage inside the target's property or by attach it to a piece of the target's hair. The victim then feels pain in his or her body without a corresponding wound. Remedies are tobacco and garlic (Sounds Italian with the chap wearing a garland of garlic during the World Cup finals!). The *brujo* (sorcerer) is often the same person as the *curandero*, one explanation why villagers were reluctant to tell us who the *curanderos* were in the villages, and once we concentrated on plant experts in other than medicinal fields we got better responses.

## A. Geography and Travel

Lomerío is located 16 degrees 43' 35" latitude South and 61 degrees 54' 35" West. It is 130,000 square hectares. According to CICOL, there are the following types of forest: *Monte*

[3] This was explained to me by Angel Sumami.

*alto denso* (1, 947 sq. hect); *Monte mixto mediano* (36,184 ); *Monte mixto bajo mediano* (36,000); *Sabanas ó pastizales* (48, 798), *Areas agricolas* (7,360), and *Colonias aisladas afloramientos rocosos* (319) (see CICOL typological map for locations).

Roads. *Un camino estable* connects Concepción with San Antonio, about 100 kms and three hours in a pickup and jeep, and 4 hours in a truck or *collectivo*. This road is passable throughout the rainy season. *Colectivos* travel regularly to San Antonio from Santa Cruz, taking from 11 to 13 hours. There is also a steady stream of large trucks traveling this route, carrying lumber, gasoline, and people. The communities are linked by *caminos vecinales* (roads maintained by communities), many of which unfortunately go straight up and down the hills, adding to erosion, rutting, and deep gouges into the mountainsides. Impassable sections force drivers to go around the road, gouging further into the forest. Chiquitanos use the roads to gather wood, and frequently cut trees along the road. They also hunt animals along the roads and have many well-worn paths connecting the roads and communities. Throughout our visitation of the communities, we traveled these *vecinal* roads without getting stuck, except for taking wrong turns because these roads are unmarked and are continually changing. It is recommended that a Chiquitano guide accompany travelers.

Chiquitanos travel along these roads by foot, horse, bike, motorcycle, and truck. They also hitchhike and when delivered at their destination, ask how much they owe you. The number of vehicles throughout the region was high with APCOB, parish, merchants, and lumber trucks frequently seen. During the rainy season between December and April, travel over vecinal roads is risky and takes triple the time required to get anywhere. It is wise to inquire about the conditions of the road before traveling. With a front end winch and four wheel drive, investigators should be able to get to the communities during the rainy season. Motorcycles are not recommended, requiring experienced drivers and very unstable in slippery clay. One favorable aspect of Lomerio is that the communities are not far apart, many within half-a-day walking distance. (For this reason large backpacks are needed in case vehicles are unable to deliver or pickup investigators).

## B. Social Organization and Communities

There are twenty-seven Chiquitano communities in Lomerío. The largest communities have around 50 families and average around 300 people: Palmira with 55 families and 300 people, Monterito (50/272), Fatima (52/312), San Lorenzo (40/250), Puquió (52/330), Salinas (45/325), and San Antonio (?/?.). Average family sizes are six people. The smallest communities have around 15 families and average around 80 people: San Pablo with 16 families and 86 people, Surusubi (10/?), San Martin (10/48), Santo Rosario (19/109), San Simon (?/125), Posterito (12/?), Bella Flor (11/87), Los Rincones (9/48), Puesto Nuevo (12/87), Santa Anita (12/62), and El Cerrito (24/110). Average family sizes are 5.6 persons. For the plant inventory, the larger and mid-size communities would present a larger pool of plant experts from which to select informants than the smaller communities. Although in our visitation, the small communities of San Antonio, Puesto Nuevo, Las Trancas, and Santa Anita also had suitable plant experts. The larger communities are notably different from smaller communities not only in number of households but also have newly constructed houses, beautiful chapels, and new schools.

## C. Housing and Chagas' Disease.

The smaller communities consist of thatched adobe huts and straw roofs. There are separate huts, sometimes facing each other, with one being used for sleeping and preparing food and the other for cooking. They use wood for fire, which they have an available supply but requires time and effort gathering it. It would be interesting to see if they are cutting trees for firewood, and if so, what about the possibility of introducing butane, as has been done in many peasant communities throughout the Altiplano. Chiquitanos sleep in beds and hammocks, frequently covered with mosquito nettings. The huts contain their personal belongs, tools, and clothing. They have upright looms on which women weave hammocks. Women weave hammocks periodically when they have spare time. For the hammocks exported to Germany, the women buy colored cotton thread imported from other regions of Bolivia, but for native hammocks they spin native cotton or use fibers from trees.

Concerning insects, they are bothered by mosquitos, *iguanacos*, *niguas*, *chullupis*, and *vinchucas*. Some people spray with Baygon to get rid of insects. Felipe Pocoena claimed that malaria was not present in Lomerío because its vector is not found there. (This is questionable and malaria pills are recommended). *Iguanacos* live in the dirt floors and produce hickylike protrusions when at the bite site. *Niguas* burrow into the flesh and have to be removed with needles.

*Vinchucas* provide the greatest health hazard to the Chiquitanos and especially visitors. Chiquitano straw huts are harbingers of *vinchucas (Triatoma Infestans)*, a reduviid bug that carries the flagellate parasite (*Trypanosoma cruzi)* and causes Chagas' disease (*Trypanosomiasis Americana)*, an incurable and ultimately deadly disease. While in El Cerrito, adults caught several specimens of *T. infestans* to show me. From Valencia's (1991) study of chagas in Bolivia, sixty percent of the Bolivian population within endemic areas tested sero-positive for chagas. The Department of Santa Cruz is an endemic area. Although I am unaware of any study concerning the Chiquitano population, estimates from similar lowland ethnic groups have a high rate of people infected with chagas. (Estimate of 23 million people in Latin America are infected with chagas). Chagas disease presents a serious problem to the animal and human population of Lomerío.

*Vinchucas* are a branch of reduviid bug without the characteristic sting of the famous assasin bug. *Vinchucas* go through five instar stages up to adulthood, ranging in size from fleas at first instar and transforming to adults with wings, about the size of small cockroaches. They basically need a place to hide during the day and a drink of mammal blood for each instar stage. Within recent years, *vinchucas* have become domiciliary, probably within the Valley of Cochabamba, passing from sylvatic to domiciliary environments as their natural habitats and prefered hosts-small mammals became extinct. Chagas disease also seriously limits wild animals. This is another example of where destruction of the forest and its animals has caused a very serious epidemiological concern. Within rural communities and rundown urban settings, the bug has multiplied to astronomical dimensions with one house the Tarija reported to have 8,000 bugs. In Lomerío *vinchucas* live in cracks, behind pictures, and in ceilings of straw or in cracks of adobe walls, especially those which are not plastered. A gliding bug, they descend from the ceiling upon sleeping animals and humans, insert their proboscis and suck a bloodmeal, defecate,

and deposite *T. cruzi* in the foecal matter. *T. cruzi* enters the wound or through lacerated surface, which happens when scratched. *T. cruzi* then become intracellular, prefering heart, second the intestines, and thirdly the esophagus. Human site location is also a function *T. cruzi* zydomes (strains), of which some 100 have been identified. In Sucre, for example, high occurrence of lower intestine infestation site as suggested zydome differentiation.

Initial infection results in an acute phase in only 28 percent of the cases--especially between children and immunologically incompetent individuals. The acute phase is signaled by high fever, a carbuncle sore at bite site, and weakness for several weeks. Many children die of the acute phase, and they should be treated to keep the parasite infection down and prevent damages from an overworking immune system. After the acute phase, begins a latent phase for some years, and finally a chronic phase when the person dies. It is treatable in all phases, but not likely curable, so that the person does not die and the parasite infection is kept down. Once through the acute phase, the victim is partially immune from further acute phases, which is an advantage in that the acute phase can kill people. People in the chronic phase remain infected and will eventually die of the disease. It is also passed from mother to infant (about 15%) and through blood transfusions (in 1990, over half the blood in Bolivia was infected, but now blood is treated with some gentian formulas that people don't like because it makes the blood purple. To make matters worse, chagas is an autoimmune disease in that the amastigote and trypomastigote forms of the parasite take on human cells, mask them to a degree, and the human immune system produces antibody T and B cells that attack its own cells. Tests for chagas are an ELISA test which tests indirectly for antibodies, but is sometimes confused with syphylis and leismniasis flagelate parasites, so repeated testing is recommended if found positive. One direct test is xenodiagnosis, where sterile bugs are used to bite the patient and see if the bugs pick up the parasite. This is useful to detect parasite population and highly recommended for anyone who tests positive with the ELISA.

Prevention of chagas has begun in Lomerío by DESBOS(?) and the parish with a housing improvement project to replace inadequate housing with *vinchuca* proof houses. This consists of tile roofing, solidly laid foundations, tile floors, screened windows, and totally plastered ceilings and walls. Members of the parish cooperative provide the wood, pilars, ceiling beams, place rocks for the cement, lay the support for the tiles, and provide all the manual labor. DEBOS provides the cement, plaster, nails, tiles, bricks, flooring, and transportation costs. The fact that the *Cooperative Artesanía* made the roof tiles and bricks which were sold to DEBOS and given to those that wanted a new house provided additional income for members of this cooperative, which in turn was used by them to buy materials for the new house. In short, instead of giving the money outright, DEBOS used it to buy tiles which in turn created income for their makers, and which in turn was used by the Chiquitanos to buy housing materials.

Not all Chiquitanos opted for new houses, a limited number were selected, and I am not sure on what criteria. Felipe told me that his house was being delayed because he needed $400 to buy supplies, so he was working in the tile pit. Even though many Chiquitanos now have improved houses, they still harbor animals inside and store many products, which continue to provide places for *vinchucas* to hide. Housing hygiene is very difficult among campesinos. Prevention is the best way to deal with chagas: don't sleep in rooms that are run down and have not been sprayed. I think the parish sprays the visitor's house and dormitory, but again the

question is when. It is recommended that BOLFOR personnel sleep in tents or in mosquito covered hammocks, outside. I used a bug proof underwear, and covered my face with DEET while in Lomerío, even though the cold kept them away. It is important that the netting cover all around the person unlike the mosquito *vinchucas* are superb crawlers and in lower instar stages, about the size of a large flea so they can live in the mattress. *Vinchucas* have taken up residence in collective seats, infecting unwary travelers[4]. In addition to domiciliary *Triatoma Infestans*, there are a number of sylvatic carriers of *T. cruzi* in the forests of Bolivia within the Chiquito and Lomerío area: some are *Rhodnius prolixus, Triatoma sordida, and Panstrongylus* ?, so forest workers also have to be careful of infection. Forest mammals are also subject to chagas disease, which takes its toll on wildlife. Chagas disease has become an important variable to consider in forest management.

## D. Social Organization

Chiquitano houses encircle a plaza. Although they refer to four sides of the plaza, it is obvious that their houses encircle the plaza, reminiscent of times when their villages consisted of huts in a circular arrangement and were divided into moieties, as is common among such groups. Their political organization of alcalde, two caciques, and two vocales, also indicates a dual social organization. Marriage patterns were not consistent throughout the villages visited. In one smaller community, everyone belonged to the same lineage with 12 families descending from a common ancestor. They all had the same name. There is some indication that the various communities within Lomerío correspond to various tribes incorporated into the Chiquitano confederation.

For marriage in smaller villages, the men selected wives from neighboring communities, and the woman came to live in the husband's village. This form of endogamous community, one lineage, and virilocality (wife lives with husband's lineage) is not found in the larger communitgies. Marriage patterns in larger villages indicated as many as 12 male lineages (indicated from last names) and exchange of spouses between these lineages. Signicantly, people in the smaller villages are united by belonging to the same patrilineage or marrying into it, and within larger communities, people are united by marriage exchange between the patrilineages.

Traditionally up until 1980, Chiquitanos married someone whom their parents chose. Parents of the boy visited parents of the girl presenting them with a rooster, and if the girl's parents exchanged a hen in return, then an agreement was reached for marriage. Presently, Chiquitano youth select their own spouses, but the exchanging of chickens still perdures.

[4]For more information, see my book, The Kiss of Death: Chagas Disease in latin America, which has been my major research for the last four years. Parasitologiests, such as George Stewart, consider chagas as one of the worst parasitical diseases, along with Trypanosomiasis Africana, or sleeping sickness.

After marriage, they live with the spouse's family until they are able to build their house. Chiquitanos have a saying, "*Casarse es nada, la olla es la condenada,*" which means that it is easy to get married, but what causes trouble is sharing the same pot.

It is important to think of the Chiquitano household as a base in that it is perceived as a container or storage center in which efforts are made to increase its holdings: things are continually kept, replenished, and built up. Items in the household are not envisioned as things to make profits with as in terms of a corporation, but rather things are accrued to maintain the household and perpetuate its existence. Thus, one finds that they never throw things away or that they are very reluctant to tear down a building. Although the household is seen as the basic unit of subsistence, the household is also seen as an end in itself: subsistence is to keep the household going.

Within this base, women's role is secondary to men who are seen as agriculturists. We found no Chiquitano women holding office in any of the communities, and women were reticent to accept nominations to be plant informants. One informant blatantly told me that Chiquitano women are inferior to men, which is one reason why they don't do alot of things. Chiquitano women function in the biological and socially reproductive tasks: they raise the children, being important for transmitting tradition and values important to Chiquitano culture. They also process food and prepare meals for the family. Outside the base, women do tasks similar to that of the household: preparing food, cooking, and selling food to outsiders. A few maintain stores in San Antonio. Their role is that of biological and social reproduction, whereas the man's role is viewed as that of production.

Chiquitano males are agriculturalists, builders, and hunters. Their role is to bring products to the base. Increasingly, Chiquitano men are becoming involved in production for sale, rather than for accumulation within the base. This is significant in the use of forest products in that until recently the Chiquitanos used the forest basically to maintain and increase the base: seen mostly as material products. Now, the forest is seen as a source of money that will pay for items demanded outside of the base, such as schooling, as well as to transform the base, $4,000 to build a new house. It is predicted that if the plant inventory uncovers some forgotten but useful forest products, these products will interest Chiquitanos to the degree that they add to their base and/or present opportunities to produce capital. In other words, Chiquitanos are somewhere between a subsistence peasant economy, situated in the base--a non capitalistic economy, and production for capital gain.

Another aspect of Chiquitano economics is a recent tradition of cooperatives, heavily subsidized by international monies through the Church, APCOB, and DESBOS (?). Already mentioned, this has transformed traditional agriculturalists, gatherers, and hunters with a subsistence economy into successful producers for capital gain. Consider the Cooperativa Artesanías, located about 2 kilometers from San Antonio. Within recent years, a friar from the parish invited a tile maker to teach several men of the parish how to make ceramic tiles for the roof and bricks for the walls. The parish also provided the set-up cost for certain materials, estimated at less than $500. Groups of adults and children were allowed to make tiles and bricks in a somewhat modified cooperative endeavor of *minga* to make sufficient materials for each

others houses. However, some adults have seen this as means of capital gain and have united together to make and sell a load of bricks. The group that I interviewed figured that each participant would make around $200 a month that is if they worked very hard for one month, but with the cold weather, they figured that they would not make this much. They said that they would use this money to pay for their new house construction. In San Antonio, the price for 1,000 roof tiles is US$176, for 1,000 bricks are US$ 25, and for 1,000 floor tiles are US$ 35. In Santa Cruz, the price for the same amount of roof tiles is $220. I found no overhead in the production of ceramics: there was an abundance of fine clay, dug from deep pits, which once they had finished became filled with water, a scarcity in the area and providing a swimming pool for the children. The kilns were made from the same bricks, and dead brush and trees provided firewood. (I consider this as a viable building supply, which might deviate Chiquitano's interest in logging: it would be interesting to profit differences and transportation costs for wood and tiles.

Chiquitano productive capacity is also found in household activities, such as women weaving hammocks in their homes, but this is not as profitable as tile making. If the Chiquitano women sells the hammock herself, the going price is around BS$200, but if she makes it according to parish standards, the price is standardized according to size and goes for BS$300. In marketing *casera* products, standardization of product quality and pricing is important: otherwise traders will competitively undercut each other. C*ampesinos* are frequently at a disadvantage in *casera* operations because they frequently need money and are at the mercy of the buyer. In the above instance, the parish serves as the trader for the hammocks and table cloths.

Concerning marketing of forest products and herbals, an important advantage is that these are naturally produced objects and can easily receive this certification. Moreover, a superior quality product is required, and preferably a small and light object that can easily be shipped. Marketing links can be made through environmentally interested groups. Some group, such as APCOB or the Parish serve as the marketing link. One highly successful cooperative is Fotrama in Cochabamba, which markets sweaters, rugs, and other clothing, made by Quechua peasants throughout the world. This started as a parish operation and grew to be a very large business. The most likely forest products to succeed are natural perfumes, condiments, spices, and essences. The Chiquitano market in these products could possibly use Tomas Enos' connections with herbal marketing groups in north America. Enos operates out of Silver City, New Mexico, the mecca of natural plant use. However, several distributors of herbals informed me that the US market centered on European/Chinese herbs. This could be turned around, once an ethnic group and sustainable foresty is tied in with any purchase of Chiquitano herbals. In sum, Chiquitano economy has some very positive features for development of forest products for sale in the international market: a cooperative sense of doing labor-intensive work, already accustomed to marketing on an international scale, both household (crafty) production and larger scale operations, and a successful record of making good use of subsidies. The task remains to find forest products that are novel and useful to an international market. It is not recommended that these products be intended for the Bolivian market, mostly because Bolivians expect to get things cheaper from the natives and the Bolivian internal market is saturated with poorly done, crafty, and folksy stuff, rather than some authentic indigenous artifacts: the exception being Andean weaving, which hardly bring a profit to the weaver.

## E. Agriculture

Chiquitanos grow three principle products: rice, peanuts, and maize in their *chacos. Chacos* are their fields of shifting cultivation.[5] They always use the *monte alto*, an area of semideciduous forest, for their *chacos*. Chiquitanos customarily have two *chacos*, with an average of half an hectare per adult male in each *chaco*. The nuclear family has the *chaco*, and because men are agriculturalists women do not receive *chacos,* but are viewed as *amas de la casa*, literally "masters of the house." The *chaco* belongs more to the mans than to the woman. However, women transports things back and forth from the *chaco*, as well as carry water and food to it. The role of the woman is to take care of the house, children, and make bread and chicha.

The *chaco* has a cycle and an age. The cycle begins in July when all members of the family and other nuclear families clear the field (*tumbar el monte*). In Spanish, they say, "*Empieza la limpieza de chaco ó carpida*" and when it is finished, they say "*El chaco está carpido.*" They cut the slender trees and shrubs with their machetes, and then they cut the larger trees. In August and September, they burn the fallen mass, which puts a quick nitrogen fix into the soil. They plant corn and rice in October and November, and peanuts in January.

The harvest season is from March to June, times when they are very busy. Corn is ripe by January, but they can leave it to mature on the stock, but for rice there is great urgency to harvest it at the appropriate time. There are two varieties of rice: one that matures and is harvested earlier than the other. Rice harvests are in March and April, times when the Chiquitanos are occupied the most.

Peanut are their major source of income and are harvested in May and June. For the peanut harvest, they dig up the plant with a stick and place them together in a pile in the field for the plant to dry. After a week or two, they return to remove the peanuts and place them in sacks. They carry them to their homes to shell them and soon after sell them to traveling buyers, usually at below market prices (Bs20 an *arroba*--low price; 25 acceptable; and 30 is a good price). Chiquitanos tend to sell their produce at harvest time, and seldom wait for demand to increase during off harvest times and for prices to rise.

Rice is produced for their own consumption, which they rarely sell. The 1994 harvest has been poor in Puquio, Santo Rosario, San Simon, and San Antonio due to a drought, but San Lorenzo has had a better rice harvest because it is a lower and more humid region.

Corn is also grown for their own consumption, especially for *mote* and chicha. Because

[5] Mario Arrien provided the following information. Mario is working on his Magister (PH.D.) from the University of Vienna. The topic of his thesis among the Chiquitanos is *The Economy of Subsistence and Organization of Work of the Chiquitanos of the Lowlands of Bolivia.* He began this research in January of 1994 and has been doing participant observation among the Chiquitanos since March, 1994. The methodology employed is that by Johnson, time and location of each member of the family for one hour periods by random sample. He plans to continue fieldwork for one more year, perhaps more if funds are available. He is a well trained anthropologist capable of providing assistance to BOLFOR.

chicha has an important ritual and social value, corn is the most highly valued crop of the Chiquitanos. Chiquitano households have corn cribs, unique in that the corn is stacked in layers, providing the appearance of a wine cellar. Also important to the household is a special cooking room with earthen fireplaces set into the center of the room that have three openings to hold the large *cántaros* of chicha. The ceremonial and social use of chicha, as well as weaving techniques and pottery, links the Chiquitanos with the highland Quechuas. Scholars, such as Lathrop, argue for close trading ties between the great Andean civilizations and lowland Amazonian hunting and gathering groups long before the Spanish Conquest.

Chiquitanos still have the following native varieties of corn: *maiz blando, maiz perla, and maiz overo*. They probably have subvarieties of these, a subject that needs to be studied. They have lost and are losing native species. Some native varieties have been genetically inferior, and another area of research would be how to genetically strengthen native species. These are important areas of botanical research, perhaps for advanced theses projects.

The *chaco* produces crops for three to five years, depending upon the insects, and then becomes *barbecho.* Chiquitanos sometimes have the same name for different things: *barbecho dejado, barbecho cultivado*, and *barbechon* when it is abandoned. The language relies heavily upon point of view: a *chaco* is *barbecho* from the viewpoint of the field, rather than from some linguistically defined category, the same is true for feminine and masculine points of view that correspond to different language forms. Words take their reality more from nature and gender than from the dictionary. This always presents a problem for classificatory oriented scientists, who have to put things into pre-ordained schemas, so as to appear standardized and scientific. Slipping into the shifting world of the Chiquitanos takes alot of mental gymnastics, linguistics and cultural sensitivity.

Chiquitano categories their fields into *chaco (zona de cultivo), barbechon (zona de bosque secundario), monte alto (zona de bosque primaria),* and *pampa (zona arbolada).* Principle zones for Chiquitanos are the *monte alto* and *la pampa.* The *monte alto* is a semideciduous forest with from 40 to 50 species of trees per hectare (20 cms in diameter at chest level). The *pampa* is characterized by closed in vegetation (*tipo cerrado*), bushes, grasses, and smaller and twisted trees. During the dry season, Chiquitanos burn the grass to produce more abundant grass, *corona*, for their cattle. The trees survived the fire with scorched and twisted trunks damaged from the fire. *Corona* grass is beginning to dominate the *pampa*. Other grasses found in the *pampa* are *zaeta*, *motaco* and *sujo*. *Zaeta* and *mataco* are used to thatch their huts. Much preferred, *zaeta* lasts twenty years, *motaco* three years, and other grasses absorb water and remain wet.

Chiquitanos have increasingly become cattle raisers, with the sale of meat a secondary income to that of peanuts. Research needs to be done as to what the annual income of Chiquitanos is in regard to peanuts and cattle. Chiquitano economy is not a monetary economy: they sell produce mainly to purchase basics, school materials for their children, and for travel to Concepción or Santa Cruz. San Antonio has a several stores, some cooperatives, supposedly managed by the school teachers. There are two traveling truck stores, which circle the larger villages. They display items on the flat bed of the truck. Among the items sold are rice, noodles, soaps, sugar, threads, bicycle supplies, clothes, primary medical supplies, *abarcas* (sandals),

assorted hardware (locks, chains, nails, and screws), notebooks, pencils, and erasers. Sales are under three pesos per person.

A suitable economic study would be the petty economy of such merchants in view of the high overhead (truck, gasoline, and storage) as opposed to the cooperative stores. In almost all mercantile activity of the Chiquitanos, there appears to be a large percentage of value added to their products which is not proportionately rewarded: shelling of the peanuts, trucking goods to distant villages, and weaving of native cotton into hammocks. This is one reason why cattle grazing, a rather effortless task, are taking over in that the cattle graze themselves and produce the value.

The cattle roam freely throughout the forest. Within one village, the adults were in the midst of a serious discussion concerning how to keep the cattle out of their *chacos.* Their solution was to encircle the *chaco* with barbed fence, and they were in the process of raising money to do this. Barbed fences are costly in that chacos are changed every five or so years and each man has two *chacos*. Before long, the forest will have abandoned sections enclosed by barbed fences. The impact of this on wild game is another subject for study: both regarding injuring and limiting animals.

## F. Language

Chiquitano language remains a vital force for group identity in Lomerío. All adult women and most adult men speak it as their first language. Adolescents can understand it but some do not speak it. Lingua Chiquitana is now taught in bilingual schools.. When I presented my talks to the adults of the communities, it was customary for someone to translate my Spanish into Chiquitano, even though all appeared to understand what I had said.

Principle characteristics of Chiquitano are the following: the pronunciation is clear and soft, although it has nasal and guttural sounds.[6] Chiquitanos do not reduplicate consonents, nor do they unite them so what happens is that when speaking they easily wander off, substantive nouns do not have cases but are united to the possessives with many varieties of particular pronouns.

For example in ancient Chiquitano, *poos* = house, *ipoo* = my house, *apoo* = your house, *ipoosti* = his house, *ipoos* = her house, *opoo* = our house (inclusive), *zoipoo* = our house (exclusive), *aupoo* = your house, *niporruma* = the house of them (masculine), *niyoporr* = the house of them (female).

Chiquitano language has different forms for male and female speech. Ancient Chiquitanos referred to this as "*hablar varonil*" y "*hablar mujeril o femenil*". The following are the different translations of "a man went to hunt in the woods with dogs." A man would use the following speech: "*Tamanti noñünrr yebotü acüba eana nüunrr yochepe niyaburr tamocomanca*." Whereas

[6] See Jesús Galeote Torno, *Manitana auqui besüro: Gramática moderna de la lengua Chiquitana y vocabulario básico*, 1993, Santa Cruz: Imprenta "Los Huérfanos".

a woman would say, "*Taman noñünrr yebotitü acübati eana nüunrr yochepe niyaburrrti tamocomanca*". The woman cannot use the masculine language, even though she is relating what a man has said or representing speech of a man. The man can use both masculine and feminine speech. For example, when a man speaks of God, celestial beings, angels, of other men and like, he employs the masculine language. When he speaks of other things: women, animated or inanimated beings, strange practices of Americans, he uses the feminine form. The woman always employs the feminine form to refer to God, men, other women, and animate and inanimate beings. Finally for substantive proper nouns, there exist masculine and feminine languages, which can only be used by the man or woman, respectively.

| | | | |
|---|---|---|---|
| As examples: | my father | *iyaü* (masculine) | *nirrupu* (feminine) |
| | my brother | *nisaruqui* " | *nichübaurri* " |
| | my sister | *niquiasi* | *nisaruqui* |

Chiquitano language is also characterized by inclusive and exclusive first person plurals, so they distinguish "we" as to include us as against them, or the inclusive form of using "we" to refer to everybody. This is also characteristic of the Aymara language.

Certain socio-linguistic conclusions can be derived from the structure of their language: that women have a secondary position in regard to manners of expression, that there are distinct cultural and conceptual forms of categorization for males and females, and that Chiquitanos distinguish themselves from others with the inclusivity and exclusivity of the first person plural. Masculine and Feminine forms of speech compare with class forms of speech as one would find in Indonesia in that both language create boundaries between peoples. One Chiquitano informant told me that women are inferior to men, as indeed indicated in their separate languages.

In attempting to arrive at Chiquitano ethnobotany, it was evidenced in visiting the communities that the women were shy to respond to the invitation to be informants, and they were selected only upon our insistence that women be included. There will also be some concern by the men with having a female investigator or female investigators from BOLFOR, but it appears that the communities have become accustomed to roles of mestizo women, both as nuns, health workers, teachers, and merchants.

Using their language as a cue to Chiquitano ethnobotany, one would expect plants to be classified into masculine and feminine, that women would have certain relationships to plants different from that of men, and that information in the Chiquitano language needs to be collected about the plants for any serious ethnobotanical understanding. Ideally, the CICOL investigators and Bolfor investigators would be able to speak Chiquitano. One alternative is to tape interviews of Chiquitano information about plants and do linguistic work latter.

# *FURTHER ANALYSIS OF DATA BASE*

The following proposals are suggested as ways of utilizing the data base of plant usage among the Chiquitano.

## 1. Assessment of Plant Inventory for Commercial Usages

Analysis of plant inventory for possible commercial products is priority. After completion of the plant inventory, the first level of analysis is to assess the value of forest plants about usage. This would include clustering plants into uses (*abejas, adornos, alimenticios, artesanías, la caza, construcción, cosméticos, fiesta, forraje, ligno, limpieza, linderos, medicina veterinaria, medicina humana, social, and veneno*) to ascertain what particular uses are most significant and present possibilities for commercialization. For example, Chiquitanos may have many plants for poisons that may show specialized expertise in the use of toxic substances for insecticides, or they may have specialized in artisanary folk crafts, such as carvings. Analysis should be done to find plants to which labor and skill value are added: for example a skilled floral arrangement of dried flowers draws more money than just the flowers. The second level
of research is to select potentially marketable plants or plant products, which includes criteria of sustainability, marketability, and profitably. Feasibility and marketing studies need to be done regarding availability and sustainability of prospective plant(s), labor investment and processing costs, transportation, and marketing costs.

It is recommended that plants and plant products be selected for commercialization that do not fit under the requirements for the FDA. Strong candidates for profitable commercialization are cosmetics and condiments: exotic skins lotions, face creams, erotic scents, and spices. Regarding condiments, herbal spices and essences have become a billion-dollar business in the U.S. buyers are accustomed to Chinese and European herbs, but these herbs are grown in the U.S. The major source of ginseng for the U.S. and China has become the U.S. Thus, there is the possibility of having Chiquitanos grow and market herbs high on the demand list for American and European markets. In short, research is needed into what aspects of the international market would be the most feasible and profitable for plant products and what Chiquitano plants or plant products fit into these slots.

## 2. Translation of Notebuilder files into a relational data base.

Notebuilder data base is a qualitative data bank that is excellent for textual entries. The Notebuilder data base needs to code into a relational data bank within Foxpro, such as the one designed by Frances Cook and Laura Hastings of the Royal Botanical Gardens. The BOLFOR relational data base would then be within the standard uses descriptors for TDWG and be able to exchange information with environmental and botanical institutions using similar relational data bases. However, modifications need to be made to the Cook and Hastings descriptors. Then the BOLFOR relational data base is able to communicate with similar data bases, downloading and uploading information. Because plant information is so immense and so discrete, a textual data base (Notebuilder) and some relational data bases (Foxpro) are necessary. It is paramount that the programming of the relational data base be compatible with other botanical relational data base (Botanical Research Institute of Texas uses Paradox relational data base).

**3. Probability studies of effectiveness of Plants.**

Although this pertains principally to medicinal plants, it is also relevant for cosmetics, condiments, and foods. Because phytochemical analysis and other experiments with plants are costly, an important way to begin is to search through data banks and herbal books for information (chemical, usage, and treatment) about the plants found in the BOLFOR inventory. Research would entail a data bank search using the botanical names of the Chiquitano plants. Farnsworth of University of Illinois, Chicago, and James Duke has medicinal plant data banks, and many entries list the active ingredients. Given the facts that before 1940 medicinal remedies consisted of plants and elements, there are vast amounts of literature on medicinal plants to be found in journals and books prior to 1940. This is done by checking the inventory list of botanical names with indices of herbal books throughout the world and entering pertinent information into the Notebuilder file and Foxpro relational data file. As the evidence accumulates, probability increases that certain plants are effective cures.

**4. Cross-Cultural Comparison**

Cross-cultural Comparison of the use of Chiquitano herbal medicines with similar plants used as herbal medicines by other ethnic groups. Research has indicated that the cultural manipulation of plants is an important factor in its effectiveness. It is possible that certain Chiquitano plants or usages are not as useful or profitable because of changing cultural practices. For example, Mexicans derived proteins from a combination of eating corn tortillas with beans, but more recently are making flour tortillas which do not constitute the amino acid combination. Consider that wild tobacco is one of the first medicinal plants used throughout the Americas, specifically used in ritual and curing contexts, but now is used for recreational and stimulant purposes to the detriment of health. As for number 5, probability is increased when the same plant is used for the same purposes in other areas, but further analysis is also needed to rule out diffusion. The fact that the same plant may be used for the same treatment throughout the world may be due more to diffusion than causality.

**5. Reintroduction of Plant Usage**.

The purpose of this research would be to find plants that are not included within the plant inventory and to assess whether or not they should be reintroduced into usage. From visitation of Chiquitano communities, we found that Chiquitanos have lost substantial information on plant usage within the last two generations. Some of this knowledge will be recovered through the inventory because it is still remembered by the elderly. Even though the plant inventory will recover this knowledge for the Chiquitanos, remembered and recalled information is not enough to motivate them to reintroduces these usages. Other considerations are practicality, value added, labor costs, and cost effectiveness. For example, as one herbalist said Chiquitanos would rather go to the hospital for an injection than concoct a herbal remedy. In fact, his herbal practice has almost become obsolete. Education in practical health care with natural products, foods and medicines, is important. Perhaps, forest fruits and natural sweeteners would be great substitutes for the inordinate use of sugar. Another alternative would be molasses, produced by Chiquitanos. Another method is through a program to implement *viveros* (herbal gardens), another is to hold workshops with

the knowledgeable elderly instructing others on the uses of forest products, and another is make videos, slide shows, and posters.

**6. Phytochemistry Research.**

Phytochemistry is helpful to know what chemicals are contained in the plants and forest products. Phytochemistry has probably been done on the majority of plants within the inventory so it is only a matter of looking this information up. The best source books for this are those on pharmacosogny (sp?). Tim of the herbario/museo is an understudy of the Elwin-Lewis, who with his wife, have done extensive work on the contents of medicinal plants. They would be good sources with which to begin and find other references. There is an extensive German manual of pharmacosogny that lists the ingredients of plants (two pages on coca). Other sources are Farnsworth or Duke's data base. There is a large amount of this information available on Bolivian medicinal plants, such as the books of Jaime Zalles, Joseph Bastien, Luis Girault, Enrique Oblitas, and Cárdenas as well as commercial information from Promenat, Vita and Inti in La Paz. Zalles is Bolivia's most knowledge expert in this regard. would be a good consultant in this regard.

Laboratory analysis of phytochemistry is necessary when this information is not provided in the literature and the product is used as condiment, medicine, or food. It is not recommended that this be done by a laboratory already in existence for a cost item basis. Phytochemistry is not a sure indicator of the effectiveness of the plant, and it merely tells you what chemicals are found in the plant. How these chemicals work against diseases is additional research. Bilyea, one of the most effective cures of the Kallawayas, was found to contain riboflavin, not much news. The particular combination of chemicals and molecules within any given plant is very complex and often these substances work in a synergistic fashion. Phytochemistry does indicate if toxins are present, however, once again the toxins may be modified within the same plant. (This is one reason why native information is valuable because it is hard to figure out through chemical analysis, assays, and refractionations how nature works in the curative process).

**7. Refractionation and assay testing.**

Once certain levels of probability have been established, refractionation and assay testing can be done. Refractionation involves first putting the plant material into aqueous and other solutions that are at first crudely tested against the pathogen. Assay tests are putting the refractionated sample with first the pathogen in a dish, and then with the human cell in another dish. This is to evaluate a therapeutic index (TI) which is the inverse relation of the amount it takes to kill the pathogen divided into the amount that the active ingredient takes to kill a human cell (two distinct experiments). For example, if it takes 10 micrograms to kill E. coli, and 100 micrograms to kill a human cell, then the TI for this plant is 10. Usually any active ingredient that kills pathogens will also kill human cells, so TI is merely the number of which it takes to overdose (aspirin TI is around 40). If in a refraction of a plant, a TI of 30 is reached with crude material, then this plant undergoes further lab tests. If not it is discarded. Out of 40 plants we tested for AIDS, we got about 12 on the first round that met this criteria. The next step is to further refractionate so as to remove the toxic materials and isolate the active agents. To date we have pushed four plants up to between 100 and 243. But this changes because as we refractionate, we also remove chemicals that are

interacting, so the TI drops. It is unlikely that any of our plants will be a cure for AIDS, but much progress has been made on natural molecular structures active against this virus. Once the molecular structure is found, then this will be synthesized, consequently no use for the native plant. However, in some cures, the molecular structure of the plant can be simulated in the laboratory, such as two linked oxygen molecules found in a plant from China that supposedly is effective in curing cerebral malaria.

If refractionation is warranted through high probability levels for drug leads, then dried samples of these plants could be sent to a laboratory that tests for pathogens similar to the one that it supposedly cures. One possibility is our consortium of laboratories to test for different therapeutic effects: antibacterial, antiviral, antitumoral, and antichagasic and for AIDS. This consortium of laboratories includes The University of Texas at Arlington, Texas Christian University, Botanical Research Institute of Texas, The University of California at Irvine, The Mayo Clinic, Walter Reed Hospital, and La Universidad de Antofagasta. This would be arranged through contract with our consortium on a cost basis. I suggest that CICOL or APCOB do this and pay the expenses in that then they would be co-holders of the patent with the other institutions involved. Once the TI gets high, then pharmaceutical companies take interest and buy into patent rights, usually at high percentages because they get one of 100 marketable products from any tested, it takes an average of 10 years, and 100 million dollars. Sometimes, a drug company will provide venture capital. Again, if we have strong evidence of anyone plant from references and uses and preliminary testing, then it is likely that a drug company can be encouraged to provide venture capital.

**8. Intellectual Property Rights.**

Items from nature cannot be given patents. A patent can only be registered if the plant is processed in some fashion. Refraction is one such process. It may be important that BOLFOR devise ways to process the plant and get a patent before divulging information about it properties. Suggested methods are to give the Chiquitanos a percentage of the patent rights along with others who have added value. In my work, we have four patents on AIDS cures, which will probably amount to 4% percent of patent rites on each plant after patent is leased or sold to a drug company, which on an average will spend up to 100 million and 10 years to produce and get approved. The Kallawaya Indians, The University of Texas at Arlington, Texas Christian University, and the University of California at Irvine hold equal share of this 4%. We only applied for patents on these plants after the therapeutic index was above 100. It is important that these matters be communicated to Chiquitanos, CICOL, and APCOB up front. Many think that it is only a matter of finding the right plant, getting a patent, and becoming rich.

**9. Primary Health Care**.

One objective of BOLFOR is to improve primary health care among the Chiquitanos. The parish of San Antonio is already doing this to an advanced degree, so BOLFOR could contribute by complementing this health care system with the use of natural remedies. One model is that of PROMENAT ( Sr. Mondaca and Jaime Zalles), which stands for the promotion of traditional medicines. Promenat is a small household operation which produces primary health care remedies (mustard patches, analgesics, tonics, laxatives, and purgatives) from plants. The campesinos from the Department of La Paz bring in the plants, get paid for

them, and are given seeds and instructed how to replant the plants. Periodically, Zalles visits the same communities to provide workshops on health and sickness. The campesinos get money for the plants, replant them, and receive health care. Promenat is non-profitable and is self-supporting. *Campesinos* use the above remedies for about 98 percent of their illnesses, so it would be profitable for them to produce them and to take care of their health needs. Observing the poor dental hygiene and high incidence of worms among children, some suggestions would be plants that are effective vermifuges (of which there are many) and plants that can be used as mouth washes or for tooth paste. In La Paz, they market a toothpaste from coca leaves.

## *INSTRUCCIONES PARA LLENAR EL CUESTIONARIO*

**Número de Página*:*** Cada cuestionario debe tener un número de página que sea distinto de los demás. Se refiere a la hoja del cuestionario por su único número. Cada investigador tiene su numeración para las páginas. Es muy importante que se cuiden bien las hojas del cuestionario. Sería mejor utilizar un clipboard y ponerlo en un sobre largo de plástico. No doble el cuestionario y debe llenarlo con un bolígrafo impermeable. Cada investigador debe llenar el cuestionario con letra clara para que cualquier otra persona pueda leerlo. También, es importante grabar la entrevista y marcar la cinta con la fecha, comunidad y número de página . El cuestionario y la cinta son pruebas de sus datos. Después de la entrevista, se puede completar el cuestionario. Lo importante es llenar el cuestionario en forma completa, clara y precisa.

**1. Nombre Vernacular:** Este debe ser el nombre más conocido por los Chiquitanos. Puede ser en su propio idioma o en castellano. Si es en castellano o Chiquitano, también debe anotar el mismo nombre en números 2 ó 3. Se utilizará el nombre vernacular para llamar esta planta y se lo ordenará en orden alfabético en el inventario.

**2. Nombre Castellano**: La letra del nombre castellano debe tener la misma letra como otros herbolarios y libros botánicos. Si los Chiquitanos no conocen su nombre en castellano, deben buscar referencia en otros libros y poner la cita (Autor, Fecha, Página). Estas citas son para NoteBuilder.

**3. Nombre Chiquitano:** Las letras Chiquitanas deben ser las mismas utilizadas en su gramática que se encuentra en La Casa de Cultura por 30 pesos. Hay que tener cuidado de escribir claramente sus letras marcando todos acentos.

**4. Familia:** Esto refiere a la familia taxonómica.

**5. Género**: Esto refiere al género taxonómico.

**6. Especie**: Esto refiere a la especie taxonómica.

**7. Subespecie**: Si hay, se coloca aquí

**8. Nombrador:** Este se refiere a la persona quien ha identificado el taxónimo botánico de la planta, e.g. Linneaus. Si la planta tiene otra referencia de número, se pone aquí dentro de ( ).

**9. Investigador:** Se ponen los nombres completos de los investigadores de BOLFOR y CICOL.

**10. Informante:** Se pone el nombre completo del informante. Esto es muy importante para la propiedad intelectual. Si hay dos o mas, hay que distinguir quien es la persona que da la información esencial sobre la planta.

**11. Fecha:** Ponga la fecha en el momento que encontró la planta y haya escuchado la información. También ponga la hora y el minuto exacto. Esto es importante porque el data record de la máquina fotográfica anota la fecha, hora y minuto. Sino sería difícil reconocer la planta y la foto.

**12. Comunidad:** Aquí se pone el nombre de la comunidad.

**13. GPS:** Se pone el lugar exacto y altura con este instrumento.

**14. Muestra Sacada:** Si ha sacado una muestra, ponga la fecha. Si no, déjelo vacío.

**15. Foto Sacada:** Anote la fecha, hora y minuto de tomar la foto que corresponde al datarecorder de la cámara.

**16. Calidad Chiquitana:** Los Chiquitanos clasifican plantas medicinales y alimenticias en clima cálido, frío, tibio, seco y húmedo. También, si ellos tienen su sistema de clasificación, anote esto abajo en observaciones (24).

**17. Descripción Popular:** Descripción corta y simple que permita a un no profesional botánico reconocer la planta principalmente a través de sus caracteres vegetativos.

**18. Descripción Botanica**: Descripción completa según los criterios botánicos. Si utiliza referencias botánicas, ponga la citación después (autor, año de publicación: página). La referencia completa debe ser puesta en la fila de referencias en NOTEBUILDER.

**19. Hábitat y Descripción Geográfica:** Utilizando las zonas de Lomerío: Monte alto denso; Monte mixto mediano; Monte mixto bajo mediano; Sabanas o pastizales, áreas agrícolas, y colonias aisladas de afloramientos rocosos, identifica el tipo de bosque donde se encuentra la planta. Ver el mapa tipológico forestal (CICOL: Mapa 1). Es importante que cada investigador tenga una copia de este mapa. Se encuentra en BOLFOR. También, es necesario que ponga el croquis de este mapa (F-1E to F-6E).

Fuera de lo técnico, es necessario que usted describa las características del lugar según el terreno (cerca del agua, camino, aislado, etc.), el tipo de suelo, cuantas plantas se encuentran, plantas nativas o introducidas).

**20. Usos:** Para cada uso diferente, debe poner una cruz (x) en las diferentes categorías (20.1-20.19). Cuando se entra en estos datos en NOTEBUILDER, debe entrar la palabra completa de cada uso, esto servirá para la búsqueda de las categorías de usos. En la secciones 21-23 Modo de Uso, debe explicar cada uso. Si hay más usos, puede utilizar una segunda hoja del mismo cuestionario, entrando en el mismo Número de Página con .1, por ejemplo Página Número 28.1 e indicar al final de página 28, que continue en pagina 28.1. Con grampas combine los dos cuestionarios.

Los usos de las plantas son los aplicados por los chiquitanos. Pero si después hay usos que ellos no utilizan, se debe poner en la referencia que no es información de los Chiquitanos. Muchas plantas tienen múltiples usos: Por ejemplo la chicha se la utiliza en fiestas, como alimento y socialmente. Entonces, tiene que marcar todos estos usos.

La palabra **Linderos** significa el uso de plantas como linderos, estos linderos sirven para hacer cercos y evitar que las vacas ingresen a sus chacos.

**Cazar:** Algunas plantas son importantes para atraer a los animales y luego cazarlos. Algunas plantas son importantes como comida de animales, sin estas plantas, los animales se alejan.

Es importante que los investigadores examinen todos los usos de las plantas, no solamente para uso medicinal o veterinario.

**21. Modo de Uso:** Esta es la sección más importante y lo principal es que los investigadores saquen toda la información posible en esta parte. Respuestas para estas preguntas: Porqué utiliza esta planta? Cuándo utiliza esta planta? Cómo utiliza esta planta? Cuáles son los efectos de esta planta? Qué partes de la planta utiliza? Cómo prepara esta planta para uso? Si usted puede observar el uso de la planta, mejor, saque fotos y transcriba en detalle el proceso. En la segunda y tercera campaña, puede pedir una muestra. Recuerde que la ciencia está en los detalles. Observe todo y anote todo. Es mejor que usted anote cuando la persona está explicando y revise sus datos el mismo día por la noche. La memoria nos falla. Si no recuerda algo, vuelva a preguntar. Nunca ponga datos que usted no está seguro. En estos casos, ponga esta información en **25 Observaciones** para recordar investigar nuevamente.

**22-23. Modo de Uso:** Es mejor que usted separe los diferentes modos de uso y ponga un uso distinto en un cuadro. Si hay mas de tres modos de usos, añada otra página del mismo cuestionario, poniendo Número de Página 28**.1.**

**24. Etnociencia:** Bajo esta categoría se trata de descubrir el sistema Chiquitano de clasificación (su etnociencia de entender cómo se siembran las plantas, la relación de la población de plantas con poblaciones humanas, los valores de las plantas). Algunos campesinos clasifican plantas según la metáfora del cuerpo humano, algunos grupos según un sistema de plantas cálidas, frías, secas y húmedas; otros según edad o sexo. También, algunos piensan sobre la relación de sus plantas con sus espíritus. Esta información es importante para entender la relación de los Chiquitanos con sus plantas fuera de lo práctico. Por ejemplo, algunas plantas pueden ser muy buenas para utilizar, pero ellos no las utilizan por un tabú.

**25. Observaciones:** Abajo de observación, puede poner sus impresiones del informante: si es experto, no muy conocido, dudable, etc.. Esto puede servir como guía de confianza en la información de esta persona. También puede poner notitas para no olvidar de hacer algo: sacar fotos, muestras, o volver a sacar más datos.

En cualquier cuestionario, siempre hay datos que no caben en las categorías. En este caso, puede poner estos datos dentro de observaciones.

*Página Número_____*

# *CUESTIONARIO DE PLANTAS UTILES - LOMERIO*

| 1.Nombre Vernacular | 2. Nombre Castellano | 3. Nombre Chiquitano | 4. Familia |
|---|---|---|---|
| | | | |
| 5. Género | 6. Especie | 7. Sub-especie | 8. Nombrador |
| | | | |
| 9. Investigador | 10. Informante | 11. Fecha | 12. Comunidad |
| | | | |
| 13. GPS | 14. Muestra Sacada(fe.) | 15. Foto Sacada (fecha) | 16. Calidad Chiquitana |
| 17. Descripción Popular (descripción simple y corta según el entendimiento popular de Chiquitanos) | | | |
| 18. Descripción Botánica (según criterios botánicos) | | | |
| 19. Hábitat y Descripción Geográfica (Dónde crece la planta? Es planta nativa o introducida?) | | | |
| 20. Usos (chequear) | 20.1 Abejas | 20.2 Adornos | 20.3 Alimenticias |
| 20.4 Artesanías | 20.5 Cazar | 20.6 Construcción | 20.7 Cosméticos |
| 20.8 Fiesta | 20.9 Forraje | 20.10 Fuego | 20.11 Limpieza |
| 20.12 Linderos | 20.13 Medicina | 10.14 Social | 20.15 Veterinaria |
| 20.16 Veneno | 20.17 | 20.28 | 20.19 |
| 21. Modo de uso (parte de la planta, prparación y aplicación) | | | |
| 22. Modo de uso (parte de la planta, preparación y aplicación) | | | |
| 23. Mode de Uso (parte de la planta, preparación y aplicación) | | | |
| 24. Etnociencia (descripción del uso de la planta según la cultura chiquitana. Leyendas o valores) | | | |
| 25. Observaciones | | | |

# *THESIS PROPOSALS CONCERNING CHIQUITANO ETHNOSCIENCE*

*The following ideas are presented as possible research projects which could be undertaken once the survey of useful plants is completed. The research could be undertaken by BOLFOR consultants and/or students.*

## Title: Assessment of Plant Inventory for Commercial Usages

Proposal is to analyze plant inventory for possible commercial products. Purpose is to find forest products within the Lomerío that can produce income for the Chiquitanos. Research includes analysis of plant usage as reported in the data base to find some sustainable, marketable, and profitable plants or products from plants. This implies feasibility studies regarding availability and sustainability of prospective plant(s), labor investment and processing costs, transportation, and marketing costs. Candidate should be skilled in peasant economics, marketing, and feasibility studies. Result is a feasibility study with analysis of commercial prospects for select plants of Lomerío.

## Title: Assessment of Plant Inventory for Pharmaceutical Products

Proposal is to analyze medicinal plants within data base for possible drug leads. Purpose is to find medicinal plants within the Lomerío that can produce income for the Chiquitanos as well as guarantee the sustainability of the forest. Research entails search of the herbal literature throughout the world for information on the medicinal uses of plants found in the Lomerío. It also includes searching through computer data banks, such as that of Professor Farnsworth of the University of Illinois, Chicago, and James Duke of Bethesda, MD. Candidate should be skilled in library and computer searches, pharmacosogny, and medicine. Result is the entry into Notebuilder files cross-cultural and cross-referential material on medicinal plant usage, as well as a print out containing this field (Cross-Cultural References) with assessment of pharmaceutical worth for the medicinal plants. (This thesis proposal can be divided into several theses: computer data base search; herbal books of Amazonia; herbal books of South America, herbal books of China, and herbal books of Africa).

## Title: Chiquitano Plants and Their Understanding of the Forest

It is hypothesized from studies of similar groups that Chiquitanos have an elaborate system of mapping out territories where forest products are found. This map of native ecology frequently has mythical, cultural, and physical connotations. Proposal is to make a cultural/ecological map of how Chiquitanos conceptualize their forest. Purpose is to understand Chiquitano forestry management. Candidate is required to do fieldwork among Chiquitanos. Result is a monograph that documents a cultural map of Chiquitano plants and places where plants are gathered as well as assesses the relevance of these cultural understandings for sustainable forestry management.

**Title: Ethnohistorical Use of Plants found in Lomerío**

Proposal is to compare present-day use of plants in Lomerío with uses in the 17th and 18th century. Purpose is to detect plants that are not being presently used with the possibility of reintroducing them. Study includes first examination of present-day plant uses in Lomerío and information within the BOLFOR plant inventory, and secondly examining Jesuit chronicles (1609-1757) for additional information on plants now being used and for leads as to plants traditionally used but since abandoned. Archives for documents are found in Concepción (Ñuflo Chávez), San Ignacio de Velasco (Chiquitos), and perhaps the national archives in Sucre. Candidate needs to visit archives and be skilled in paleography. Result is a monograph which tabulates similarities and differences in plant use then and now, as well as contains information about plants long abandoned that can be reinstated into Chiquitano plant use today.

**Title: Chiquitano Languages use of Feminine Speech and Masculine Speech Concerning Names of Plants.**

Chiquitano language distinguishes between masculine speech (*hablar varonil*) and feminine speech (*hablar femeninamente*). For substantive nouns, there exist appropriate words for each form of speech. Proposal is to catalogue masculine and feminine speech forms for plant names as found in the plant inventory. Purpose is to understand gender roles in regard to plant use and management toward the end of involving both genders in forestry management. Candidate should have linguistic training and/or ability to speak and understand Chiquitana language. Candidate can do fieldwork among the Chiquitanos. Result is a catalogue and analysis of masculine and feminine speech forms for plant names with regard to involving both genders in forestry management.

**Title: Symbolic Use of Forest Plants within Fiestas Patronales Chiquitanas**

Chiquitanos employ many forest products within their fiestas patronales, or Saint fiestas characteristic to each community. Proposal is to document, analyze, and interpret the use of forest products within these rituals, both in regard to practical and symbolic use. Purpose is to gain some understanding of cultural values that Chiquitanos place upon certain forest products about expressive activity and how this can be used as a communication means as well as motivational force in communicating to them forestry management practices. Practical use refers to how the plant serves the needs of the participants of the fiesta. Symbolic use implies how the plant expresses cultural meanings, values, and social organization. For example, the way that chicha is distributed represents hierarchies of respect and honor. The cross is made of trees, yet it symbolizes ancestors, Christ, crucifixion, center of the plaza. Candidate is required to do field work among the Chiquitanos and do participant observation for fiestas patronales. Result is a monograph on the symbolic use of plants in Chiquitano fiestas. Monograph will include an analysis of how expressive activities such as fiestas can be used in forestry management.

**Title: Symbolic Use of Forest Plants within Chiquitano Curing Rituals**

Chiquitanos employ forest products for their curing rituals. Proposal is to document, analyze, and interpret the use of forest products within these rituals, both in regard to practical and symbolic use. Practical use refers to how the plant serves the medicinal needs of the participants. Symbolic use implies how plants signify social conflicts, social alliances, cultural values, body ideas, and other attitudes toward sickness. Purpose is to understand Chiquitano indigenous health systems and to use this information to improve existing health care. Candidate is required to do fieldwork among Chiquitanos and participant observation at curing rituals. Result is a monograph of the symbolic use of plants in Chiquitano curing rituals that also includes practical implications of how this knowledge can improve primary health care in Lomerío.

**Title: Chiquitano Classification of Plants according to Humoral Theory**

It is hypothesized that one classification system of plants that the Chiquitanos employ is that a Greek/European humoral system: namely that the body consists of four humors (blood, phlegm, black and yellow bile) which correspond to the seasons, foods, and medicines (hot, cold, wet, and dry). The art of healing and living is to balance the hot with the cold, wet with the dry, and for sickness: cold herbs are used for hot illnesses. Proposal is to examine the qualities that Chiquitanos give to herbs and plants, and how these qualities correspond to the qualities of health and sickness. Purpose is to understand Chiquitano indigenous health systems and to use this information to improve existing health care, especially with use of herbal medicines. Candidate needs to be knowledgeable on European herbals used by Jesuit missionaries and also needs to question Chiquitanos about what is the quality of their plants, sicknesses, and food. Result is a monograph on Chiquitano adaptation of European humoral systems to present day herbal usage. Monograph is to include practical implications of how this knowledge can improve primary health care in Lomerío.

**Title: Chiquitano Shamanistic Use of Forest Plants**

Even though Chiquitanos probably adopted European humoral systems in curing, it is likely that they maintained shamanistic traditions, indicative of many lowland ethnic groups. Proposal is to examine to what degree Chiquitanos continue to use healing traditions characteristic of Amazonian groups and what roles do plant's serve within these rituals. Interest is in symbolic and pharmacological properties of these plants. Purpose of this study is to examine to what degree these rituals contribute to Chiquitano health management and in what ways biomedicine can be articulated with ethnic medicine. Candidate is required to know about Amazonian curing rituals, be able to do participant observation within Chiquitano rituals, and have some chemical and botanical knowledge to analyze these plants. Result is a monograph which includes analysis of use of Amazonian rituals (autochoctonous) between the Chiquitanos and the interrelationship of these shamanistic rituals to health and sickness. Monograph is also to deal with points of articulation between this form of ethnomedicine and biomedicine.

**Title: Chiquitano Use of Plants within Oral Traditions**

Chiquitanos symbolically refer to plants within their oral tradition (legends, myths, folklore, and music). Proposal is to analyze these expressions to interpret how they understand plants within their cosmovision. Purpose to look at oral traditions as a communicative mechanism concerning forest products and ways in which this oral tradition can be used to sustain the forest. Candidate needs to understand Chiquitana language or work with someone who does. Candidate needs to collect oral traditions with tape recorder, be able to translate, and interpret. Analysis is to figure out their world view: the ideological relationship of Chiquitanos to their plants and to their deities. Result is a monograph containing a description of the role that plants play within their worldview. Monograph will contain analysis of how oral traditions can be used to sustain the forest.